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EXAMINER

LESNIEWSKI, VICTOR D

ART UNIT PAPER NUMBER

2152

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/820,988	<b>Applicant(s)</b> CHI ET AL.	
	<b>Examiner</b> Victor Lesniewski	<b>Art Unit</b> 2152	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 21 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The amendment filed 12/27/2005 has been placed of record in the file.
2. Claims 1 and 11 have been amended.
3. Claims 21 and 22 have been added.
4. Claims 1-22 are now pending.
5. The applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the following new grounds of rejection.

### ***Response to Amendment***

6. Claims have been amended to show the use of a spreading activation algorithm. The amendment proves a change in scope to the independent claims as the independent claims now explicitly state that a probability is estimated using a spreading activation algorithm. However, none of the amended claims show a patentable distinction over the prior art as evidenced by the following new grounds of rejection.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
8. Claims 21 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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9. Claims 21 and 22 recite the limitation "the weighted content matrix" in line 5 of each claim. There is insufficient antecedent basis for this limitation in the claims. Nowhere in the claims or in the claims from which they depend is there previous mention of a weighted content matrix, making the scope of the claims unclear.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 2, 4, 6-12, 14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herz (U.S. Patent Number 6,029,195) in view of Pirolli et al. (U.S. Patent Number 5,835,905), hereinafter referred to as Pirolli.

12. Herz disclosed a system for customized electronic identification of desirable objects. In an analogous art, Pirolli disclosed a system for the identification of documents relevant to certain focus documents using spreading activation.

13. Concerning claims 1 and 11, Herz did not explicitly disclose that his system estimates probabilities using a spreading activation algorithm. However, the use of spreading activation algorithms in collections of documents was well known in the art as evidenced by Pirolli whose system is focused on predicting documents by spreading activation. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system provided by Herz by adding the ability to estimate a probability using a spreading activation

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algorithm as provided by Pirolli. Here the combination satisfies the need for analysis of topology, content, and usage of linked collections of web documents. See Pirolli, column 1, line 65 through column 2, line 11. The specific line citations to the limitations of the claims below belong to Herz unless otherwise cited.

14. Thereby, the combination of Herz and Pirolli discloses:

- <Claim 1>

A method for identifying user types in a collection of connected content portions comprising: determining at least one significant user path of connected content portions (column 65, lines 49-54), determining a multi-modal user path user information need for each at least one significant user path (column 7, lines 4-9) and the user information need includes a value that reflects a probability that a user will browse through a content portion in at least one significant user path (column 57, lines 11-37), the probability being estimated using a spreading activation algorithm (Pirolli, column 10, lines 1-21); for each content portion comprising each of the at least one significant user path, determining a multi-modal content portion feature information including a content feature information, connection feature information, inward connection feature information and outward connection feature information (column 7, lines 1-4; column 10, lines 37-52; and column 12, line 61 through column 13, line 19); combining each multi-modal content portion feature information for the user path with the multi-modal user path user information need (column 7, lines 9-18); determining a similarity function and a measure of similarity for the multi-modal user path information (column 15, line 34 through column 17, line 57); determining a multi-modal clustering type (column 24, line 40 through column 25,

line 10); clustering the multi-modal user path information based on the multi-modal clustering type, the similarity function and the measure of similarity (column 23, lines 60-66).

- <Claim 2>

The method of claim 1, wherein the multi-modal user path user information need is a multi-modal user path information need vector and the multi-modal content portion feature information is a multi-modal content portion feature vector (column 15, lines 53-60).

- <Claim 4>

The method of claim 2, wherein determining content feature information is based on weighted word frequency of each content portion (column 13, lines 54-67).

- <Claim 6>

The method of claim 2, wherein determining the inward connection feature information and the outward connection feature information further comprises normalizing the inward connection feature information and the outward connection feature information (column 66, lines 1-64).

- <Claim 7>

The method of claim 2, wherein the similarity functions is based on determining the cosine between two multi-modal vectors (column 16, lines 40-48).

- <Claim 8>

The method of claim 2, wherein the multi-modal clustering type is at least one of K-means clustering, wavefront clustering (column 24, lines 9-15).

- <Claim 9>

The method of claim 2, wherein each content portion in the user path is weighted using at least one of a content portion access frequency weighting, a weighting of the content portion based on content portion position in the user path (column 57, lines 12-16).

- <Claim 10>

The method of claim 2, wherein each multi-modal feature vector may be independently weighted (column 16, lines 49-62).

- <Claim 11>

A system for identifying user types in a collection of connected content portions comprising: a controller circuit, a memory circuit, an input/output circuit; a multi-modal clustering type determining circuit; a content determining circuit; a usage determining circuit; a topology determining circuit (figures 1 and 2 and column 34, line 46 through column 35, line 55); a user path determining circuit that determines at least one significant user path of connected content portions (column 65, lines 49-54); a multi-modal user path user information need determining circuit that determines a user information need for each user path (column 7, lines 4-9) and the user information need includes a value that reflects a probability that a user will browse through a content portion in at least one significant user path (column 57, lines 11-37), the probability being estimated using a spreading activation algorithm (Pirulli, column 10, lines 1-21); multi-modal content, multi-modal connection, multi-modal inward connection and multi-modal outward connection feature information determining circuits that determine multi-modal content, multi-modal connection, multi-modal inward connection and multi-modal

outward connection feature information for each content portion comprising a user path (column 7, lines 1-4; column 10, lines 37-52; and column 12, line 61 through column 13, line 19); wherein the controller combines each content portion multi-modal content, multi-modal connection, multi-modal inward connection and multi-modal outward connection feature information for the user path with the multi-modal user path user information need into a multi-modal user type (column 7, lines 9-18); a similarity function determining circuit for determining similarity between two multi-modal information (column 15, line 34 through column 17, line 57); a multi-modal clustering circuit that clusters the multi-modal user type information based on the multi-modal clustering type, the similarity function and a specified measure of similarity (column 23, lines 60-66).

- <Claim 12>

The system of claim 11, wherein the multi-modal user path user information need is a multi-modal user path information need vector and the multi-modal content portion feature information is a multi-modal content portion feature vector (column 15, lines 53-60).

- <Claim 14>

The system of claim 12, wherein the multi-modal content feature information determining circuit determines words based on weighted word frequency of each content portion (column 13, lines 54-67).



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- <Claim 16>

The system of claim 12, wherein the multi-modal inward connection feature determining circuit and the multi-modal outward connection feature determining circuit normalize the inward connection feature information and the outward connection feature information (column 66, lines 1-64).

- <Claim 17>

The system of claim 12, wherein the similarity function determining circuit determines similarity based on the cosine between two multi-modal vectors (column 16, lines 40-48).

- <Claim 18>

The system of claim 12, wherein the multi-modal clustering type is at least one of K-means clustering, wavefront clustering (column 24, lines 9-15).

- <Claim 19>

The system of claim 12, wherein each content portion in the user path is weighted by at least one of a content portion access frequency weighting circuit that weights the content portion based on access frequency, a path position weighting circuit that determines a weighting based on the position of the content portion within the user path (column 57, lines 12-16).

- <Claim 20>

The system of claim 12, further comprising a multi-modal feature weighting circuit that weights each multi-modal feature vector independently (column 16, lines 49-62).

Since the combination of Herz and Pirolli discloses all of the above limitations, claims 1, 2, 4, 6-12, 14, and 16-20 are rejected.

15. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herz in view of Pirolli, as applied above, further in view of applicant's admitted prior art, namely "Mining Longest Repeating Subsequences to Predict World Wide Web Surfing" by James Pitkow and Peter Pirolli, October 1999, hereinafter referred to as Prior.

16. The combination of Herz and Pirolli disclosed a system for customized electronic identification of desirable objects. In an analogous art, Prior disclosed procedures for modeling and predicting user surfing paths. Just as Herz's invention, Prior tracks specific information about each user as they move throughout the established content.

17. Concerning claims 3 and 13, the combination of Herz and Pirolli did not explicitly disclose that the system calculated the longest repeating sub-sequence. However, Prior uses the longest repeating sub-sequence to find significant web surfing patterns. See Section 1. Since the inventions encompass the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of Herz and Pirolli by adding the ability to calculate the longest repeating sub-sequence as provided by Prior. This would make sense because it would aid the system of Herz and Pirolli in finding specific paths to desirable objects for the user.

18. Thereby, the combination of Herz, Pirolli, and Prior discloses:

- <Claim 3>

The method of claim 2, wherein determining significant user paths uses the longest repeating sub-sequences (Prior, Introduction paragraph 2).

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- <Claim 13>

The system of claim 12, wherein the user path determining circuit determines significant user paths using the longest repeating sub-sequences (Prior, Introduction paragraph 2).

Since the combination of Herz, Pirolli, and Prior discloses all of the above limitations, claims 3 and 13 are rejected.

19. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herz in view of Pirolli, as applied above, further in view of Johnson et al. (U.S. Patent Number 5,878,384), hereinafter referred to as Johnson.

20. The combination of Herz and Pirolli disclosed a system for customized electronic identification of desirable objects. In an analogous art, Johnson disclosed procedures for monitoring information flow and performing data collection in a network. Just as Herz's invention, Johnson tracks specific information about each user as they move throughout the established content.

21. Concerning claims 5 and 15, the combination of Herz and Pirolli did not explicitly disclose that the system could break down the URL into constituent words. However, Johnson's system searches based on URL string components and thus must break down the URL. See column 6, lines 1-31. Furthermore, analysis of the component strings of a URL is well known in the art for various tasks in networking. Since the inventions encompass the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of Herz and Pirolli by adding the ability to break down the URL into constituent words as provided by Johnson. This would make sense

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because it would aid the system of Herz and Pirolli in finding specific paths to desirable objects for the user.

22. Thereby, the combination of Herz, Pirolli, and Johnson discloses:

- <Claim 5>

The method of claim 2, wherein determining the connection feature information comprises breaking the connection portion into constituent words using "/" and "." as word boundaries (Johnson, column 6, lines 26-31).

- <Claim 15>

The system of claim 12, wherein the multi-modal connection feature information determining circuit determines connection features by breaking the connection portion or link into constituent words using "/" and "." as word boundaries (Johnson, column 6, lines 26-31).

Since the combination of Herz, Pirolli, and Johnson discloses all of the above limitations, claims 5 and 15 are rejected.

***Allowable Subject Matter***

23. Claims 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

24. Additionally, in order for claims 21 and 22 to be allowable, the issues regarding 35 U.S.C. 112 discussed above would also have to be resolved.

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25. The following is a statement of reasons for the indication of allowable subject matter: In general, the above listed claims distinguish themselves over the prior art by delineating formulas for generating a document vector used in determining a multi-modal user path user information need. Although the prior art may show a previous knowledge of using spreading activation algorithms with collections of web documents, there is not shown a system which uses such formulas as those claimed in claims 21 and 22 for determining the user information need. Furthermore, the prior art gives no indication that it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use such formulas as those claimed in claims 21 and 22 for determining the user information need.

### *Conclusion*

26. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

- Horvitz (U.S. Patent Number 6,067,565) disclosed a method for pre-fetching a web page of potential future interest.
- Jiang et al. (U.S. Patent Number 6,385,641) disclosed a method of adaptive pre-fetching of files based on user requests.
- Tso et al. (U.S. Patent Number 6,421,733) disclosed a system that maintains a transcoding server which contains an object cache.
- Datta (U.S. Patent Number 6,622,168) disclosed a system that utilizes a pre-loader for caching web page content elements or components for faster on-demand and anticipatory dynamic web page delivery.

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27. The applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). The applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor Lesniewski whose telephone number is 571-272-3987. The examiner can normally be reached on Monday through Thursday.

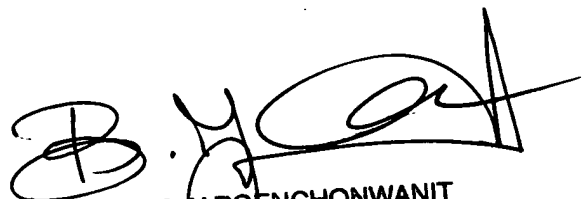
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Victor Lesniewski  
Patent Examiner  
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BUNJOB JAROENCHONWANIT  
SUPERVISORY PATENT EXAMINER